Clean Versions of Replacement Claims

Please cancel claims 1-19 without prejudice and add new claims 20-46 to the following clean versions.

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20. A virtual machine, comprising:

class loader that enables the virtual machine to obtain a set of classes via a network as needed while executing an application program, the class loader converting the classes obtained via the network into a predefined class definition format and then storing the classes into a class structure in a memory such that the classes stored in the class structure are represented as a set of arrays and references of the predefined definition format;

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memory manager that selects and purges the arrays and references of the classes from the class structure so as to minimize an amount of the memory consumed by the class structure and to minimize class loading activities on the network.

21. The virtual machine of claim 20, wherein the memory manager deletes a set of objects from the memory which are associated with the classes purged from the class structure.

22. The virtual machine of claim 21, further comprising a list of associations between the objects and the classes stored in the class structure such that the memory manager deletes the objects in response to the list.

23. The virtual machine of claim 20, wherein the memory manager selects a least recently used class in the class structure and purges the arrays and references of the

least recently used class from the class structure if an instance of the least recently used class is not being used by the application program.

24. The virtual machine of claim 20, wherein the memory manager selects a least recently used class in the class structure and purges the arrays and references of the least recently used class from the class structure if an instance of the least recently used class or of a parent class or of a child class of the least recently used class is not being used by the application program.

25. The virtual machine of claim 24, further comprising a list of hierarchical associations among the classes in the class structure such that the memory manager determines whether the instances of the parent class or of the child class are not being used in response to the list.

26. The virtual machine of claim 20, wherein the memory manager purges the classes from the class structure at periodic times.

27. The virtual machine of claim 20, wherein the memory manager purges the classes from the class structure if an amount of available memory falls below a predetermined threshold level.

28. The virtual machine of claim 20, wherein the memory manager purges the classes from the class structure during system idle periods.

29. The virtual machine of claim 20, wherein the class loader obtains the classes from an HTTP server that exports a set of class files containing one or more of

the classes.

30. The virtual machine of claim 29, wherein the virtual machine is provided with a class definition statement that specifies one or more URLs for the class files.

31. A method for class loading in a virtual machine, comprising the steps of:

obtaining a set of classes via a network as needed while executing an application program;

converting the classes obtained via the network into a predefined class definition format and then storing the classes into a class structure in a memory such that the classes stored in the class structure are represented as a set of arrays and references of the predefined definition format;

selecting an purging the arrays and references of the classes from the class structure so as to minimize an amount of the memory consumed by the class structure and to minimize class loading activities on the network.

32. The method of claim 31, further comprising the step of deleting a set of objects from the memory which are associated with the classes purged from the class structure.

33. The method of claim 31, wherein the steps of selecting an purging comprise the steps of:

selecting a least recently used class in the class structure;

determining whether an instance of the least recently used class is being used by the application program;

purging the arrays and references of the least recently used class from the class structure if the instance is not being used.

34. The method of claim 33, wherein the step of determining whether an instance of the least recently used class is being used comprises the step of determining whether an instance of the least recently used class or of a parent class or of a child class of the least recently used class is being used by the application program.

35. The method of claim 31, wherein the steps of selecting and purging comprise the steps of selecting and purging the classes from the class structure at periodic times.

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36. The method of claim 31, wherein the steps of selecting and purging comprise the steps of selecting and purging the classes from the class structure if an amount of available memory falls below a predetermined threshold level.

37. The method of claim 31, wherein the steps of selecting and purging comprise the steps of selecting and purging the classes from the class structure during system idle periods.

38. The method of claim 31, wherein the step of obtaining a set of classes via a network comprises the step of obtaining the classes from an HTTP server that exports a set of class files containing one or more of the classes.

39. The method of claim 31, further comprising the step

of providing the virtual machine with a class definition statement that specifies one or more URLs for the class files.

40. A device, comprising:

memory that holds a class structure for storing a set of classes for use when executing an application program;

processor that executes a virtual machine including a class loader that when executed obtains the classes via a network as needed while executing the application program, the class loader converting the classes obtained via the network into a predefined class definition format and then storing the classes into the class structure such that the classes stored in the class structure are represented as a set of arrays and references of the predefined definition format, the processor executing a memory manager that selects and purges the arrays and references of the classes from the class structure so as to minimize an amount of the memory consumed by the class structure and to minimize class loading activities on the network.

41. The device of claim 40, wherein the memory manager deletes a set of objects from the memory which are associated with the classes purged from the class structure.

42. The device of claim 40, wherein the memory manager selects a least recently used class in the class structure and purges the arrays and references of the least recently used class from the class structure if an instance of the least recently used class is not being used by the application program.

43. The device of claim 40, wherein the memory manager selects a least recently used class in the class structure and purges the arrays and references of the least recently used class from the class structure if an instance of the least recently used class or of a parent class or of a child class of the least recently used class is not being used by the application program.

44. The device of claim 40, wherein the processor executes the memory manager at periodic times.

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45. The device of claim 40, wherein the processor executes the memory manager if an amount of available memory falls below a predetermined threshold level.

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46. The device of claim 40, wherein the processor executes the memory manager during system idle periods.